Small Business Innovation Research/Small Business Tech Transfer

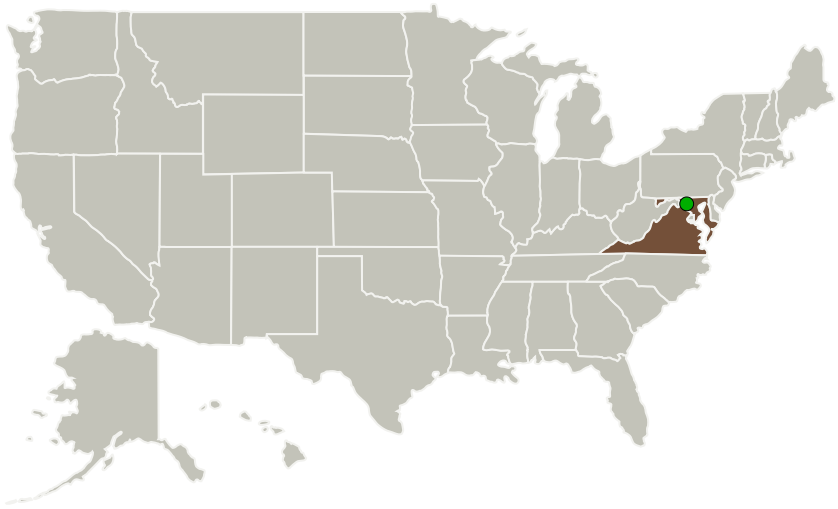
New Lidar Laser Configuration for Earth Science Measurements, Phase II

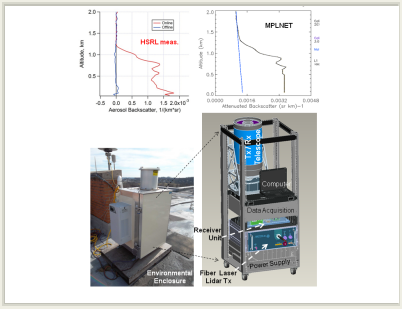
Completed Technology Project (2012 - 2014)

Project Introduction

In this STTR Phase 1 program, Fibertek successfully developed and demonstrated a breadboard version of a pulsed fiber laser capable of high-spectral resolution lidar (HSRL) measurements. This was installed in the Lidar Lab. at the Univ. of Maryland, Baltimore county (UMBC). Lidar integration, calibration and validation was successfully performed, leading to the demonstration of direct backscatter measurements up to 10km atmospheric height, and HSRL measurement of the atmospheric boundary layer aerosol. Such measurements compared very well to the co-located lidar measurements conducted via the ELF and MPLNET lidar systems. For the STTR Phase 2 program, Fibertek and UMBC propose to mature this technology platform, to develop, test, deliver and demonstrate a completed standalone HSRL lidar system capable continuos lidar measurement. The HSRL lidar transmitter sub-system can be also used for airborne HSRL missions, and the design is both power-scalable and compatible with a qualification roadmap, for future space-based HSRL missions.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Fibertek, Inc.	Lead Organization	Industry	Herndon, Virginia
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland
University of Maryland-Baltimore County(UMBC)	Supporting Organization	Academia	Baltimore, Maryland

Primary U.S. Work Locations	
Maryland	Virginia

Project Transitions

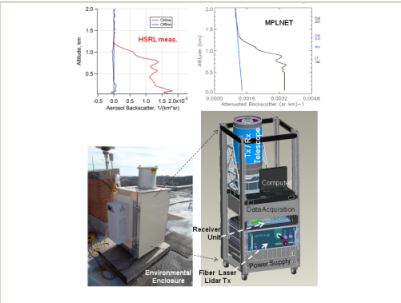
June 2012: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137411)*

Images



Project Image
New Lidar Laser Configuration for Earth Science Measurements
(https://techport.nasa.gov/image/135026)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Fibertek, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

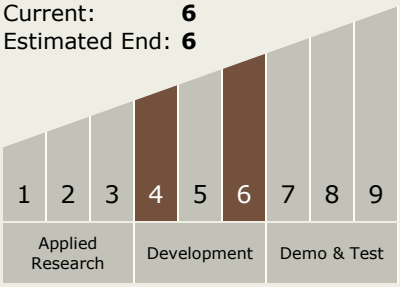
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Youming Chen

Technology Maturity (TRL)

Start: **4**
Current: **6**
Estimated End: **6**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System